

# Anxiety in Mothers of Family After Natural Disaster in a Rural Community

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## Abstract

Natural disasters are very often unexpected and can cause serious psychological anxiety, fear, sensation of uncertainty, or even panic effects on victim. For women from rural and poverty conditions, the anxiety can be a symptom which can obstruct ability to self regulate emotional reactions, or even to act properly into their family systems in these situations as the function they have in their families. The objective of this paper was to identify and describe anxiety response of mothers affected by the earthquake of 7.2 degrees in the Valley of Mexicali (rural zone) with the subject of a total of 100 mothers from Mexicali's Valley from the surrounding area of epicenter of the earthquake occurred in April 4<sup>th</sup> 2010. Anxiety was measured by means of hypersensitivity, social concern and physiological anxiety by reporting a series of cognitive indicators using the Scale of Manifested Anxiety in Adults (AMAS-A, initials in Spanish), and a self emotional-reactions report. The applied instrument showed that mothers in Mexicali's Valley presented *fear* as the more frequent emotion (24%), followed by *terror* (10.9%) and *scare* (9.9%), a total of 34.2% reported to have had two or more emotional reactions during the event. The AMAS-A questionnaire showed symptoms of clinically significant social concerning ( $n = 39$ ,  $p = 0.50$ ) and physiological anxiety. It can be concluded that the studied sample presented elevated symptoms of physiological anxiety, as well a second measured level of anxiety assessed was the social concern, and mothers in the rural region with low socio-economical resources present elevated signs of social concern after an earthquake.

## Keywords

*Anxiety; Disaster Situation; Gender*

## Introduction

The natural disasters and their consequences often result in loss with great magnitude such as loss of life, damage to property and a condition of importance to the around environment. These events of disasters are accompanied with the development of human (Ruiz, 2003), as a natural condition such as earthquakes,

storms or tornados, which means that human being must live with them even when these loses could be severe. More than any other disaster, earthquake is the most feared because they have unique characteristics which partly explain why psychological impairment is greater compared to other types of disasters (McCaughey, Hoffman, & Llewellyn, 1994, Hibino y colaborators 2009).

According to the Panamerican Health Organization (PAHO, 2002), until the 1970s, the issue of mental health lacked importance, when this kind of natural disasters occurred, which did not involved and do not have direct relation with human emotional state. Missing of development of psychological support strategies after disasters was an issue to attend (Salazar, Heredia, & Moreno, 2005). In 1977, Brownstone and collaborators announced the importance that should be approached to the mental health as in other health areas. According to Brownstone, it is important to provide the necessary and urgent attention to the victims or survivors of natural disasters in all aspects: physical, psychological and emotional, as well as the consequences that bring with it over time. It is estimated that about one-third and half of the population exposed to a natural disaster has emotional reactions, although not all have become clinically significant. The syndromes that appear most frequently in situations of these events are anxiety disorder, panic, depression, post-traumatic stress, (Najarian, & Cols. 2001, Ayala & Ochotorena, 2004) disorder crisis (Errazuriz, León, & Velasco, 2006).

Anxiety manifested in cognitive activity and physiological response, refers to a response to undefined danger, confusion, or imaginary (Sierra, Ortega, & Zubeidat, 2003), the DSM-IV-TR defines it concerns to an emotional state in which the subject can present sudden fear reactions, evasion to specific feared places, post-traumatic reactions such as cardiac

arousal to related events (DSM-IV-TR). When it occurs after an earthquake is usually due to aftershocks, which can be many and last for a long time and can affect chronically the level of arousal, and emotional changes as well as decision making (Gaborit 2006). In natural disasters, earthquakes are one of the most subjectively feared (Jackson, 1981), because of its sudden and unpredictable apparition, which can explain the psychological effect of anxiety they can produce. The family plays a key role, social grouping is an exceptional organization which guarantees the care for children and the roles for each member, and women is one who represent the core given by their responsibility and their activities. These features become more apparent in this kind of event, because women are always concerned about caring for their children, and a priority is to do everything possible to meet their needs (Serrat, 1998).

Analysis of risk and urban vulnerability, the city of Mexicali is located in one of the most seismically active areas of the country, which is located over the fault system called San Andreas, one of the most active in the world. According to information from the Seismological Network of Southern California, between 1950 and 2000 there have been about 1301 earthquakes of higher intensity than 3 degrees on the Richter scale, of these only 43 were 4.5 degrees or more on the same scale (Rodríguez, 2002). In previous studies (Hibino, & Cols. 2009) a comparison of impact of stress in health before and after the earthquake in pregnant woman who lived in the disaster zone, assessed responses related to stress before and after giving birth, it was found a significant prediction of depression and anxiety related to giving birth. In a previous study (King, & Laplante, 2005) a sample of 150 children sons of mothers who lived a natural disaster, the effects of the anxiety and prenatal stress were compared over the cognitive and language development of this sample, they revealed that the studied group showed a significantly lower development of these psychological functions.

The objective of the study was to identify and describe the levels of anxiety and the ability to respond to a natural disaster in mothers affected by the earthquake of 7.2 degrees in the Valley of Mexicali, Baja California, México, occurred in April 4<sup>th</sup> of 2010, in the following populations: Cucapah Mestizo, Indiviso and Pescadero station.

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## Method

### Participants

The sampled mother N = 100, , affected by the past April 4<sup>th</sup> 2010 earthquake occurred in the Valley of Mexicali was taken from three different locations selected from previous first aid activities which were demonstrated to be the most affected areas (Table 1), all living with their husband and children, with low economical income, as considered by parameters of the state of Baja California, México (Table 1), labors and activities realized normally by them are specified in table 1. Non mothers of family were not considered for the results, all participants responded to questionnaires as volunteers, and no payment was given for the survey, woman who presented significant symptoms of stress were also not considered (such as panic, disorientation, those cases were immediately directed to crisis intervention).

TABLE 1. THIS TABLE PRESENTS SOCIO-CULTURAL STATUS OF PARTICIPANTS, INCLUDING EDUCATION, NUMBER OF CHILDREN IN FAMILY, AND SOURCE OF STUDIED GROUPS.

Subjects	N =100
Mean age	38.4 yr
Monthly income (in Mexican Peso)	X = 4258
Education mean (in years)	X = 7.1
Mean of children in family	X = 2.3
Origin	Cucapah Mestizo 29.7%
Mexicali's Valley, México	Pescadero station 33.7%
	Indiviso 35.6%
Occupation	
House care	80.2 %
Employed	17.8 %

### Materials and Procedure

We used two different questionnaire formats, 1: An adapted special form of identification was made in order to collect the main personal data such as name, phone number, address, family members, and a subjective self report about feelings and emotions to the earthquake situation, obtained from each assessed subject, 2. Scale of Manifested Anxiety in Adults (Spanish initials AMAS-A, Reynolds, 2010), self-report instrument, which evaluates the level of anxiety

experienced by adults (from 19 to 59 year old according to this instrument), and shows 4 different scales of the anxiety: 1. Inquietude hypersensitivity (such as getting mad easier) (IHS), 2. Physiological anxiety (e.g. feeling of tense muscles) (Phys), 3. Social concerns (e.g. being kind, or being friendly) (SOC) 4. Lying and anxiety total (TOT). A crosstab table was developed as descriptive analysis, identification and a description of the anxiety levels presented by subjects. Following the earthquake of 7.2 degrees scale Richter occurred the past April 4<sup>th</sup> 2010 in Mexicali's Valley, an approximate amount of 250 families, according to results of community brigades carried out a week after the incident, was in a situation of abandonment or risk residential distributed in camps located at the following Mexicali's Valley regions: Ejido Durango, La Meza, Cucapah Mestizo, Oaxaca, Estación Delta, Indiviso, Estación Pescadero, La Puerta, La Mariana, and Ejido Carranza. Once the brigades took place, a week after, three main affected regions of the Mexicali's Valley were taken as sample to apply questionnaires to mothers, Estación Pescaderos, Cucapah Mestizo, and Indiviso. The study was made in different moments, and first approach was visiting the main affected areas from the Mexicali's Valley, to make identification of disasters zone and the application of the self emotional reactions report. The second moment of the assessment was three weeks after the disaster in which we made a second visit and located groups who were mothers, and in first visit self-reported symptoms of anxiety in emotional reactions questionnaire, such as: fear, and stress. Finally a data analysis of the results in questionnaires and anxiety applied scale was carried out in which normalization *T* score limit value according to AMAS-A (Reynolds, 2010) was applied to the results according to age, and gender, in addition, one sample *t*-test was performed to compare anxiety scales.

## Results

The anxiety levels of mothers assessed after earthquake occurred in Mexicali's Valley past April 4<sup>th</sup> 2010 were obtained two weeks after the disaster. Emotional reactions from the form acquired in first assessment, reported in first phase of the study are shown in Table 2. The results of emotional reactions questionnaire presented by the subjects were reduced according to the percentage of occurrence of the reported reactions. Non mothers were excluded from the sample, during previous psychological brigade intervention given freely to men and woman

interested in receiving the service, however, for the present study data acquired was only from woman who had at least one child at home and lived with their husband.

TABLE 2: PERCENT OF OCCURRENCE OF THE REPORTED REACTIONS AFTER THE EARTHQUAKE, WHICH WERE OBTAINED DURING PSYCHOLOGICAL CRISIS INTERVENTION.

Emotional reactions reported in interviews filter	Percentage of occurrence
Fear	24
Scared	9.9
Feeling nervous	5.0
Quiet	5.0
Terror	10.9
Concerns	3.0
Despair	3.0
Stress	1.0
Damage	2.0
Over two reactions	34.2

Anxiety was measured by means of four different types, inquietude hypersensitivity (IHS), physiological anxiety (Phys), Social concerns (SOC) lying and anxiety total. These dimensions were considered by grouping variables with symptom-related (as self-report) indicators and by three different scales, 1. Total anxiety, is determined by those indicators of general anxiety state in the person, according to the interpretation scales from the AMAS-A (Reynolds, 2010) *T* score limit value (table 4).

Analysis between anxiety scales paired *t*-test mean comparison, showed that there is significant difference among hypersensitivity, physiological anxiety, and social concern. Hypersensitivity parameters to situations related to self-esteem, reactions to emotional situations, and sensations of *feeling nervous* are demonstrated to be higher than physiological anxiety indicators ( $t = 17.197$ ,  $df = 99$ ,  $p = .000$ ), even than social concern ( $t = 21.373$ ,  $df = 99$ ,  $p = .000$ ) (tables, 5a, and 5b).

The physiological anxiety scale demonstrated that a 25.7% of the subjects presented signs of extreme physiological anxiety, concerned to all indicators of physical symptoms reported by subjects (for example tremor, or sweating of hands, etc.). It was found that 32.7% of the assessed subjects presented elevation of anxiety, corresponding to majority. The following analyzed scale was referred to the hypersensitivity sensation, related to feelings of inquietude, and 26% showed a clinically significant hypersensitivity to the situation. Social concern and stress were symptoms that appeared with higher frequency. It was observed that 39% of the assessed sample presented clinically significant signs of social concern (table 4), which were also reported in common dialogue and uncertain

vision of consequences. Reduced data of final results were resumed in the 5 anxiety scales grouped by the instrument: total anxiety, hypersensitivity, physiological anxiety, social concern, and lie, shown in Table 6.

TABLE 4: PERCENT AND T SCORE ACCORDING TO THE LIMIT VALUE OF THE OBTAINED RESULTS FROM AMAS-A DIFFERENT ANXIETY SCALES FROM THE ASSESSED MOTHERS.

Level	T score	Descriptive category	%
Anxiety (total)	≥ 75 T	Extreme	7
	65 T- 74 T	Clinically significant	30
	55 T- 64 T	Mild elevation	32
	45 T- 54 T	Expected	25
Physiological anxiety (total)	≤ 44 T	Low	6
	≥ 70 T	Extreme	22
	65 T- 69 T	Clinically significant	20
	55 T- 64 T	Mild elevation	27
Hypersensitivity (total)	45 T- 54 T	Expected	20
	≤ 44 T	Low	11
	≥ 75 T	Extreme	0
	65 T- 74 T	Clinically significant	26
Social Concerning (total)	55 T- 64 T	Mild elevation	38
	45 T- 54 T	Expected	28
	≤ 44 T	Low	8
	≥ 75 T	Extreme	0
Physiological anxiety (total)	65 T- 74 T	Clinically significant	39
	55 T- 64 T	Mild elevation	28
	45 T- 54 T	Expected	29
	≤ 44 T	Low	4

TABLE 5A. T-TEST MEAN COMPARISON BETWEEN THE DIFFERENT ANXIETY SCALES ASSESSED.

scale	t	df	Sig.
Hypersensitivity/physiological anxiety	17.197	99	.000
Hypersensitivity/social concern	21.373	99	.000
Social concern/physiological anxiety	-3.157	99	.002

TABLE 5B. MEANS AND STANDARD DEVIATIONS OF THE THREE DIFFERENT ANXIETY SCALES ASSESSED.

Scale	mean	SD
Hypersensitivity	9.32	2.92
Physiological anxiety	5.25	2.72
Social concern	4.54	1.77

TABLE 6: ANXIETY CATEGORIES FOUND IN STUDIED SAMPLE, THE TABLE SHOWS THE PERCENTAGE OF OCCURRENCE DISTRIBUTION.

Manifestations of anxiety	Percentage of occurrence
Total anxiety	32.2%
Total anxiety / hypersensitivity	37.6%
Physiological anxiety	25.7%
Social concerns / stress	38.6%
Lie	39.6%

## Discussion

The found results obtained from the methodological procedure followed for this kind of emergency, the generation or replication of research experiences

should be performed for this region, as this is a frequently seismic zone. Based on previous earthquake stress reactions and disaster effects on victim (De la Fuente, 1986, Cardeña & Spiegel, 1993, Leiva & Quintana, 2010), the development and formalization of prevention programs is a necessary activity to minimize damage and social conflicts after natural disaster emergencies.

For example, in Turkey's earthquake occurred before, the researchers (Mankuta, Levy, & Benedekc, 1999) made reference about the importance as well as an approach to emotional state during and after the event in pregnant woman. The questions in that research were intended to describe their own welfare as well as their feelings about their pregnancy, their results demonstrated the concerning for their own lives as well as relevance to their children, the description about movements of acting by instinct by covering the abdominal area, which could have strong relation to self state feelings and reactions.

Since in this country anxiety in earthquakes was strongly studied after the 1985 México City disaster, one of the main variables which share relation to the present studied is due to collective trauma occurred in victim, De la Fuente (1986) found in his study similar fear reactions in the studied sample, such as post-traumatic stress, social concern, and preoccupation about the future, and this similar effects should be studied as future research objective for our sample. According to Goenjian and cols. (2000) the miss of adequate treatments and intervention procedures can develop severe and chronic posttraumatic stress reactions associated with chronic anxiety and depressive reaction. In this case non subject-specific treatment continuity was followed after the assessment, and it was not possible to conclude the behavioral reactions found, however, a report from the Neuropsychological and Psychological service located at Guadalupe Victoria in Autonomous University of Baja California illustrated a total of 473 patients by 2011 (In conference, Galindo, Huitrón, Morales and Cordero, 2011), from whom a 3.3% report seismic related-symptoms, however, there are no reports about seismic direct relation with disorders in these patients. In other public services of psychiatry and psychology in Mexicali the reports (Buendia, 2010) it is revealed that (80 %) percentage of the attended patients were woman who presented anxiety as significant disorder in acute state. Given the growing problem after this disaster treatments was focused on making the patients talk about their experienced emotions, and pharmacological treatment when

needed. Reynolds (2010) reported that results in hypersensitivity as found in this study can lead to severe levels of recurrent non-productive thinking, or feelings of an imminent disaster, paranoia, and susceptibility to anger. Another reaction related to physiological anxiety could appear in sleep disorders, *feeling nervous*, and somatic affections.

Finally, Anwar and coworkers (2011) research made a special emphasis on the importance of the economical factors, and reported higher depression and anxiety-related symptoms in woman who lived an earthquake situation and also presented low economical resource. It should be mentioned that all of our samples came from rural region which is often related to low economical income and basic services (such as water, or electricity) missing, and the higher proportion of the studied group had less than \$4300 Mexican Pesos (approximately 400 USD) per month. However, there was no comparison with other economical samples done for this study.

## Conclusions

The results of research show that mothers affected by the earthquake of 7.2° on Richter scale the past April 4<sup>th</sup> 2010, generally have a mild level of anxiety, which means according to AMAS-A profiles that the individual is adapted to their environment possibly highly-strung; and can be fine despite certain insecurities and tends to rely on the psychological interpretation of their problems. However, social concern, hypersensitivity, and physiological subjective signs of anxiety are of large probability to appear after earthquake situation.

The results suggest the need in the Valley of Mexicali for groups trained for the care of crisis followed by natural disasters that favor the people's own abilities to deal with situations of risks well that people should have psychological training to be prepared for these kind of situations which can be included in protocol simulations.

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